AMENDMENTS TO THE SPECIFICATION

Under 37 CFR 1.121(b)(2), please amend the existing abstract of the disclosure as follows. A clean copy of the amended abstract is attached on the separate sheet captioned "Abstract of the Disclosure."

A communication device can ~~able to~~ reliably find a frequency and ~~able to reliably~~ establish frequency synchronization, despite relying on a variable reference frequency, and may do so, *e.g.*, by searching only during one or more periods of frequency stability. Once gained, such synchronization may be held continuously. ~~of frequency even if an oscillation frequency of an oscillator changes and able to continuously hold synchronization of a carrier, wherein an~~ An acquisition unit ~~uses a certain timewise stable area for a frequency search of a satellite so as to reliably find the frequency of the satellite,~~ receives from a control unit information about a frequency change of a reference signal. The acquisition unit may nonetheless continue to search for, *e.g.*, a ~~from a control unit, performs a frequency search of the~~ satellite at the frequency that had been in use before the frequency change of the reference signal. ~~after the frequency change of the reference signal,~~ An acquisition unit in such a device may search over extended periods, *e.g.*, by using ~~uses~~ two or more ~~clock~~ frequency-stable ~~areas~~ periods. ~~for the frequency search of the satellite to thereby make it possible to perform the frequency search of the satellite over a long time, and transmits a change to a tracking unit to establish synchronization of the frequency of the satellite where the frequency of the reference signal changes after the frequency search of the satellite.~~ The acquisition unit may, *e.g.*, transmit information about a change in the reference frequency to a tracking unit to maintain synchronization with the satellite.

Please amend paragraph [0065] of the published application, which begins on page 20 of the Specification, at line 25, with the words "The reference frequency oscillator 23 uses . . . ", as follows:

The reference frequency oscillator 23 uses for example 13 MHz±0.1 ppm as the reference oscillation frequency f and supplies a reference signal FOX ~~Fox~~ to the baseband unit 21 and the clock generation unit 41 of the GPS baseband unit 4. The reference frequency oscillator 23 changes the oscillation frequency by exactly Δf (for example 0.7 Hz) according to the frequency change instruction of the analog frequency change signal S21 from the D/A converter 22 and supplies a reference signal FOX ~~Fox~~ having a frequency $f+\Delta f$ after the change to the baseband unit 21 and the clock generation unit 41 of the GPS baseband unit 4.

Please amend paragraph [0067] of the published application, which begins on page 21 of the Specification, at line 18, with the words "The GPS front end unit 3 has . . . ", as follows:

The GPS front end unit 3 has, as shown in FIG. 3, an antenna 31, a low noise amplifier (LNA) 32, a band pass filter (BPF) 33 made of a SAW filter, an amplifier 34, a frequency synthesizer (FSYNS) 35, a mixer 36, an amplifier 37, a low pass filter (LPF) 38, and an analog/digital circuit (A/D) 39.

Please amend paragraph [0075] of the published application, which begins on page 23 of the Specification, at line 19, with the words "The GPS baseband unit 4 receives . . . ", as follows:

The GPS baseband unit 4 receives the reference signal FOX ~~Fox~~ of the frequency 13 MHz (or ±0.7 Hz) from the mobile phone unit 2, outputs a reference clock RCLK having a frequency of 13 MHz as it is or generates a clock obtained by multiplying or dividing the reference signal FOX ~~Fox~~, receives an IF signal S39 from the GPS front end unit 3 based on these clocks, performs acquisition for finding the synchronization point initially or when the system largely deviates from the synchronized state, controls the delay difference to be sufficiently smaller than one chip length of the spread code after the acquisition, performs tracking for establishing synchronization of the C/A code and carrier, and

performs positioning computation, position retrieval, and other processing based on the range data, Doppler shift, navigation message, time, etc.

Please amend paragraph [0077] of the published application, which begins on page 24 of the Specification, at line 17, with the words "Further, when the frequency of the reference signal . . . ", as follows:

Further, when the frequency of the reference signal FOX ~~Fox~~ frequently changes, the GPS baseband unit 4 finds it difficult to synchronize with the frequency of the RF signal from the GPS satellite found by the acquisition or find the frequency of the signal from the GPS satellite, therefore performs control to give the frequency change of the reference signal FOX ~~Fox~~ to the carrier acquisition unit and the synchronization portion so as to synchronize with the frequency of the signal from the GPS satellite and reliably find the frequency of the signal from the GPS satellite. This control will be explained later.

Please amend paragraph [0080] of the published application, which begins on page 25 of the Specification, at line 24, with the words "The clock generation unit 41 . . . ", as follows:

The clock generation unit 41 includes a multiplier, frequency divider, etc. Under the control of a control signal S48 of a control unit 48, it receives the reference signal FOX ~~Fox~~ using the 13 MHz ±0.1 ppm (or ±0.7 Hz) from the reference frequency oscillator 23 of the mobile phone unit 2 as the reference oscillation frequency f, generates the reference clock RCLK, and supplies the same to the frequency synthesizer 35 of the GPS front end unit 3. Further, the clock generation unit 41 generates the clock CLK obtained by multiplying or dividing the frequency 13 MHz ±0.1 ppm (or ±0.7 Hz) of the reference signal FOX ~~Fox~~ and supplies the same to the frequency synthesizer 35 of the GPS front end unit 3, the timer 44, the acquisition unit 46, and the tracking unit 47. Further, the clock generation unit 41 generates a sampling clock SCLK based on the reference signal FOX ~~Fox~~ and supplies the same to the acquisition unit 46. Further, the clock generation unit 41 generates operation clocks CLK etc. of the

control unit 48, the timer 44, the memory unit 45, etc. based on the reference signal FOX ~~Fox~~.

Please amend paragraph [0089] of the published application, which begins on page 28 of the Specification, at line 20, with the words "FIG. 5 is a block diagram . . . ", as follows:

FIG. 5 is a block diagram of an example of the configuration of the ~~acquisition unit 46~~ DSP 463.

Please amend paragraph [0094] of the published application, which begins on page 30 of the Specification, at line 6, with the words "The DSP 463 performs the frequency search . . . ", as follows:

The DSP 463 performs the frequency search by determining a clock stable area AST other than a margin area AMG set in advance in the area where the frequency of the reference signal FOX ~~Fox~~ changes, that is, the clock unstable area AUS as shown in FIG. 6, by the frequency change information of the reference signal FOX ~~Fox~~ from the control unit 48 (the change interval of the frequency is 2 seconds or more), and using the IF data in the RAM 462 at that frequency. Namely, by using the certain time-wise stable area for the frequency search of a satellite, it becomes possible to reliably find the frequency of the satellite. The positioning computation is also finished during this.

Please amend paragraph [0095] of the published application, which begins on page 30 of the Specification, at line 19, with the words "The DSP 463 receives the frequency change . . . ", as follows:

The DSP 463 receives the frequency change Δf of the reference signal FOX ~~Fox~~ from the control unit 48 and, as shown in FIG. 5, performs the frequency search of the satellite at the frequency before the frequency change of the reference signal FOX ~~Fox~~ after the frequency change of the reference signal FOX ~~Fox~~. Namely, by using two or more clock stable areas AST for the frequency

search of the satellite, it becomes possible to perform the frequency search of the satellite over a long time.

Please amend paragraph [0096] of the published application, which begins on page 31 of the Specification, at line 3, with the words "The DSP 463 establishes the synchronization . . . ", as follows:

The DSP 463 establishes the synchronization of the frequency of the satellite by transmitting the change f+Δf to the tracking unit 47 when the frequency of the reference signal FOX ~~Fox~~ changes after the frequency search of the satellite.

Please amend paragraph [0100] of the published application, which begins on page 32 of the Specification, at line 12, with the words "If the present frequency is f . . . ", as follows:

If the present frequency is f and the scalar multiple of the frequency change is Δfs, when the frequency of the reference signal FOX ~~Fox~~ from the mobile phone unit 2 does not change and a frequency change signal S21 is not received, that is, when there is no frequency change information, the tracking unit 47 is set with control information in the control register 472 by the control unit 48 and operates divided into the three groups of loop units shown in FIG. 11. Concretely, the tracking unit 47 operates divided into the group of loop units (471-1 to 471-N/3) for the currently synchronized frequency f and the groups of loop units (471-N/3+1 to 471-2N/3, 471-2N/3+1 to 471-N) for the frequency Δfs of the ± change from the currently synchronized frequency f (scalar multiple of change). Due to this, when the frequency changes, it is possible to synchronize the loop units in either the ± frequency band with respect to f and it is possible to continuously track a satellite. When the frequency Δfs (also ± direction) after the change is known, it is not necessary to divide the loop units into a plurality of loop units.

Please amend paragraph [0101] of the published application, which begins on page 33 of the Specification, at line 8, with the words "If the present frequency is f . . . ", as follows:

If the present frequency is f and the scalar multiple of the frequency change is Δfs, when the frequency of the reference signal FOX ~~Fox~~ from the mobile phone unit 2 changes and the frequency change signal S21 is received, that is, when there is frequency change information, the tracking unit 47 is set with control information in the control register 472 by the control unit 48 and operates divided into two groups of loop units as shown in FIG. 12. Concretely, the tracking unit 47 operates divided into the groups of loop units (471-1 to 471-N/2, 471-N/2+1 to 471-N) for the frequency Δfs of the ± change from the currently synchronized frequency f excluding the currently synchronized frequency f band (scalar multiple of change). Due to this, when the frequency changes, it is possible to synchronize the loop units in either the ± frequency band with respect to f, it is possible to continuously track the satellite, and it is possible to reduce the number of channels. When the frequency Δfs after the change (also the direction of ±) is known, it is not necessary to divide the loop units into a plurality of groups.

Please amend paragraph [0122] of the published application, which begins on page 41 of the Specification, at line 24, with the words "Further, the control unit 48 receives . . . ", as follows:

Further, the control unit 48 receives the frequency change signal S21 from the mobile phone unit 2 and performs control so as to continuously maintain the tracking of the IF carrier in the tracking processing based on the information of the change of the reference frequency of the reference signal FOX ~~Foxno~~, for example, the frequency change Δf or DIR or number of bits or other parameters. Further, when the frequency of the reference signal FOX ~~Fox~~ is frequently changed, it becomes difficult to synchronize with the frequency of an RF signal from a GPS satellite found by the acquisition or to find the frequency of a signal from a GPS satellite. Therefore, by giving the frequency change of the reference signal FOX ~~Fox~~ to the acquisition unit and the synchronization unit, the control unit 48 performs control so as to synchronize with the frequency of the signal

from the GPS satellite and reliably find the frequency of the signal from the GPS satellite. Further, in order to prevent the frequency of the IF carrier also changing when the frequency of the reference clock RCLK changes during the positioning computation and the synchronization of the received signal and the spread code no longer being able to be held, the control unit 48 outputs a frequency change stop signal S4 to the baseband unit 21 of the mobile phone unit 2 and performs control so as to prevent a change of the frequency until the positioning computation is ended even if the base station 5 of the other party in communication changes and it becomes necessary to change the oscillation frequency of the reference frequency oscillator 23 according to the established protocols. In a cellular system, the oscillation frequency is changed in 2 seconds or more, therefore the positioning operation may be ended during that period.

Please amend paragraph [0136] of the published application, which begins on page 46 of the Specification, at line 6, with the words "Next, an explanation will be given . . . ", as follows:

Next, an explanation will be given of the operation centered on the portion concerning the frequency change information of the reference signal FOX ~~Fox~~.

Please amend paragraph [0138] of the published application, which begins on page 47 of the Specification, at line 2, with the words "The D/A converter 22 converts . . . ", as follows:

The D/A converter 22 converts the digital frequency change signal S21 from the baseband unit 21 to an analog signal and outputs it to the reference frequency oscillator 23. The reference frequency oscillator 23 supplies the reference signal FOX ~~Fox~~ using for example 13 MHz ±0.1 ppm as the reference oscillation frequency f to the baseband unit 21 and the clock generation unit 41 of the GPS baseband unit 4. The reference frequency oscillator 23 changes the oscillation frequency by exactly Δf (for example 0.7 Hz) according to the frequency change instruction of the analog frequency change signal S21 from the D/A converter 22 and supplies the reference signal FOX ~~Fox~~ of frequency f+Δf

after the change to the baseband unit 21 and the clock generation unit 41 of the GPS baseband unit 4.

Please amend paragraph [0141] of the published application, which begins on page 48 of the Specification, at line 11, with the words "The GPS baseband unit 4 receives . . . ", as follows:

The GPS baseband unit 4 receives the reference signal FOX ~~Fox~~ having a frequency of 13 MHz (or ±0.7 Hz) from the mobile phone unit 2 and outputs a reference clock RCLK of the frequency 13 MHz as it is or generates a clock obtained by multiplying or dividing the reference signal FOX ~~Fox~~. Then, based on these clocks, it receives the IF signal S39 from the GPS front end unit 3, performs acquisition for finding the synchronization point initially or when the system largely deviates from the synchronized state, controls the delay difference to be sufficiently smaller in value than one chip length of the spread code after the acquisition, and performs tracking for establishing synchronization of the C/A code and carrier.

Please amend paragraph [0142] of the published application, which begins on page 48 of the Specification, at line 25, with the words "The DSP 463 of the acquisition unit 46 . . . ", as follows:

The DSP 463 of the acquisition unit 46 uses the frequency change information of the reference signal FOX ~~Fox~~ from the control unit 48 to determine a clock stable area AST other than a margin area AMG set in advance in the area where the frequency of the reference signal FOX ~~Fox~~ changes, that is, the clock unstable area AUS, and uses the IF data in the RAM 462 at that frequency for a frequency search. Namely, the DSP 463 is controlled so as to reliably find the frequency of a satellite by the control unit 48 using the certain time-wise stable area for the frequency search of a satellite. Further, the DSP 463 receives the frequency change Δf of the reference signal FOX ~~Fox~~ from the control unit 48 and searches for the frequency of the satellite at the frequency before the frequency change of the reference signal FOX ~~Fox~~ after the frequency change of the

reference signal FOX ~~Fox~~. Namely, the DSP 463 is controlled so as to perform the frequency search of the satellite over a long time by the control unit 48 using two or more clock stable areas AST for the frequency search. When the frequency of the reference signal FOX ~~Fox~~ changes after the frequency search of a satellite, the DSP 463 establishes synchronization of frequency of the satellite by transmitting the change f+Δf to the tracking unit 47.

Please amend paragraph [0143] of the published application, which begins on page 49 of the Specification, at line 24, with the words "The control unit 48 of the GPS baseband unit 4 . . . ", as follows:

The control unit 48 of the GPS baseband unit 4 receives the frequency change signal S21 from the mobile phone unit 2 and, based on the information that the reference frequency changes, for example, the frequency change Δf or DIR or the number of bits or other parameters, performs control so as to continuously maintain the tracking of the IF carrier in the tracking processing. For example, when the frequency of the reference signal FOX ~~Fox~~ of the mobile phone unit 2 does not change, the control unit 48 does not receive the frequency change signal S21, and there is no frequency change information, the tracking unit 47 is set with control information in the control register 472 by the control unit 48 and controlled so as to operate divided into the group of loop units (471-1 to 471-N/3) for the currently synchronized frequency f and the groups of loop units (471-N/3+1 to 471-2N/3, 471-2N/3+1 to 471-N) for the frequency Δfs of the ± change from the currently synchronized frequency f (scalar multiple of change). Due to this, where the frequency changes, it is possible to synchronize the loop units in either the ± frequency band with respect to f, and it is possible to continuously track the satellite. When the change of the frequency including also ± is known, the loop units do not need to be divided into a plurality of groups.

Please amend paragraph [0144] of the published application, which begins on page 50 of the Specification, at line 24, with the words "Further, when the frequency of the reference signal . . . ", as follows:

Further, when the frequency of the reference signal FOX ~~Fox~~ from the mobile phone unit 2 changes, the control unit 48 receives a frequency change signal S21, and there is frequency change information, the tracking unit 47 is set with control information in the control register 472 by the control unit 48 and is controlled to operate divided into the groups of loop units (471-1 to 471-N/2, 471-N/2+1 to 471-N) for the frequency Δfs of the ± change from the currently synchronized frequency f excluding the currently synchronized frequency f band (scalar multiple of change). Due to this, when the frequency changes, it is possible to synchronize the loop units in either the ± frequency band with respect to f, it is ~~is~~ possible to continuously track the satellite, and it is possible to reduce the number of channels.

Please amend paragraph [0148] of the published application, which begins on page 54 of the Specification, at line 1, with the words "Further, according to the present embodiment . . . ", as follows:

Further, according to the present embodiment, at the DSP 463 of the acquisition unit 46, by using a certain time-wise stable area for the frequency search of a satellite, it becomes possible to reliably find the frequency of a satellite. Further, at the DSP 463, by receiving the frequency change Δf of the reference signal FOX ~~Fox~~ from the control unit 48, performing a frequency search of a satellite at the frequency before the frequency change of the reference signal FOX ~~Fox~~ after the frequency change of the reference signal FOX ~~Fox~~, and using two or more clock stable regions AST for the frequency search of the satellite, it is possible to perform the frequency search of the satellite over a long time. Further, when the frequency of the reference signal FOX ~~Fox~~ changes after the frequency search of the satellite, the DSP 463 can establish synchronization of the frequency with the satellite by transmitting the change f+Δf to the tracking unit 47.

Please amend paragraph [0150] of the published application, which begins on page 55 of the Specification, at line 2, with the words "While the invention has been described . . . ", as follows:

While the invention has been described with reference to specific embodiments chosen for purpose of illustration, it should be apparent that numerous modifications could be made thereto by those skilled ~~techniqueed~~ in the art without departing from the basic concept and scope of the invention.